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(71) Applicant: ICT Integrated Circuit Testing GmbH  
85543 Heimstetten (DE)

(72) Inventor: Adamec, Pavel  
85540 Haar (DE)

(74) Representative: Zimmermann, Gerd Heinrich et al  
Zimmermann & Partner,  
P.O. Box 33 09 20  
80069 München (DE)

### (54) Deflection unit in a charged particle beam device

(57) A charged particle beam column comprises: a particle source (12); an objective lens (20); a pre-lens deflection unit (30) for deflecting a beam of charged particles away from the optical axis (16) on such a path (14b,14c) that the combined action of the objective lens (20) and the pre-lens deflection unit (30) directs the beam of charged particles towards the optical axis (16) to hit the specimen surface (18) from a first direction;

and an in-lens deflection unit (40) arranged in the vicinity of the objective lens (20) for redirecting the deflected beam of charged particles on such a path (14d) that the combined action of the objective lens (20) and the in-lens deflection unit (40) redirects the beam of charged particles towards the optical axis (16) to hit the specimen surface (18) under said large beam landing angle from a second direction substantially opposite to said first direction.

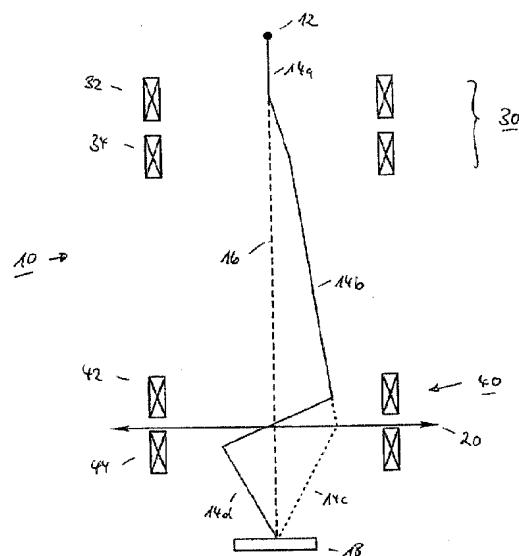


Fig. 1a



DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.7)		
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)		
X	PATENT ABSTRACTS OF JAPAN vol. 0112, no. 49, 13 August 1987 (1987-08-13) & JP 62 061253 A (JEOL LTD) * abstract; figure 1 * ---	1,13,14, 18,21	H01J37/28 H01J37/30 H01J37/147		
X	JP 58 147948 A (NIPPON DENSHI KK) 2 September 1983 (1983-09-02) * figures 1-4 *	1,13,14, 18,21			
X	JP 09 190793 A (JEOL LTD) 22 July 1997 (1997-07-22) * figure 1 *	1,13,14, 18,21			
X	GB 1 300 624 A (HITACHI LIMITED) 20 December 1972 (1972-12-20) * page 3; figures 7,8 *	1,13,14, 18,21			
A	JP 59 171445 A (HITACHI LTD) 27 September 1984 (1984-09-27) * figures 1,4 *	3,15	TECHNICAL FIELDS SEARCHED (Int.Cl.7)		
A	US 4 983 832 A (SATO) 8 January 1991 (1991-01-08) * figure 4 *	3,15	H01J		
A	US 4 095 104 A (LEPOOLE ET AL.) 13 June 1978 (1978-06-13) -----				
The present search report has been drawn up for all claims					
Place of search	Date of completion of the search	Examiner			
MUNICH	23 April 2002	Frisch, K			
CATEGORY OF CITED DOCUMENTS					
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document					
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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 10 8410

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23-04-2002

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
JP 62061253	A	17-03-1987	JP	1786258 C	31-08-1993
			JP	4079101 B	15-12-1992
JP 58147948	A	02-09-1983	JP	1611291 C	30-07-1991
			JP	2034144 B	01-08-1990
JP 9190793	A	22-07-1997	NONE		
GB 1300624	A	20-12-1972	JP	49012269 B	23-03-1974
JP 59171445	A	27-09-1984	NONE		
US 4983832	A	08-01-1991	JP	2033843 A	05-02-1990
			DE	3924605 A1	01-02-1990
			GB	2221567 A ,B	07-02-1990
US 4095104	A	13-06-1978	NL	7510276 A	03-03-1977
			CA	1061477 A1	28-08-1979
			DE	2637753 A1	03-03-1977
			FR	2322452 A1	25-03-1977
			GB	1563014 A	19-03-1980
			JP	1214809 C	27-06-1984
			JP	52030154 A	07-03-1977
			JP	58047825 B	25-10-1983